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SPECIES OF GENUS MELOSIRA AG. OF AMUR RIVER PLANKTON

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SPECIES OF GENUS MELOSIRA AG. OF AMUR RIVER PLANKTON
[O vidakh roda Melosira ag. planktona reki Amur]

by

N. A. Chalfina

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In the summer of 1957 I collected samples of Amur plankton. The following species of the genus Melosira were represented in the July (27 July) plankton: M. granulata subsp. granulata (Ehr.), M. granulata subsp. angustissima (O. Mull.) Skabitsch., and M. ambigua (Grun.) O. Mull. with the forms — f. ambigua, f. curvata Skabitsch., and f. spiroides f. nov., and in much smaller numbers M. distans subsp. alpidena (Grun.) Skabitsch. and M. varians Ag.

Evidently plankton were absent in the August collections due to the sharp rise in the water level. Among the filaments of M. ambigua presented for the first time for the Amur River, were encountered ausospores and growing from them filaments of very large diameters. In addition, resting spores were found previously unknown; their description is given below. The shape of the spore is cylindrical, and the ends are rounded (see fig., 4 and 5). The

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frustules are more compact than for the vegetating cell. The cell striae had the species-characteristic shape of broad grooves with rounded bottom. The lateral surface of the sporal valves was covered with rows of points running parallel to the longitudinal axis of the spore or somewhat obliquely. Sometimes the apex of the spore was not cross-hatched. The dimensions were as follows: diameter — 6-7 microns, height of about 10 microns, and length 20-22 microns; 9 rows of points per 10 microns and as many points per row. It was not possible to trace spore development.

M. ambigua f. curvata Skabitsch. -- M. ambigua morpha curvata Skabitsch., Skabichevskiy, 1945; 1960:143.

Thus far this form has been noted only in the Irtysh River (Skabichevskiy, 1945, 1960) and in small numbers, while it is often encountered in the Amur River, which makes it possible to describe it in greater detail. The filaments are curved in the form of a semicircle or even a circle. The diameter of the circle formed by the filament is 66-138 microns. The bend of the filament occurs due to the curvature of the cell; here the outer size of the cell (with respect to the helix) is several microns longer than the inner (the length of the convex is 20-25 microns, while the length of the concave is 16-21 microns). By the nature of the grooves and the structure of the valve, f. curvata corresponds entirely to f. ambigua (see fig., 1).

F. spiroides Chalfina f. nova.

Fila spiralia continent ad 5 flexuras spirales. Diam. flexuare 23-45 mu, intervallum inter flexuras 25-96 mu. Dimensio cellarum 3-6 mu in diam:, altitudo valvulae 8-12 mu. Series pororum 13-16 pro 10 mu pori 16 in serie. (Vide figuram, 2, 3).

Typus. URSS: Rossia, regio Chabarovsk, flumen Amur, in plancto 27 VII 1957, N. A. Chalfina; in Inst. Geolog. et Geophys. sect. Sibir. Acad. sci. URSS (Novosibirsk) conservatur.

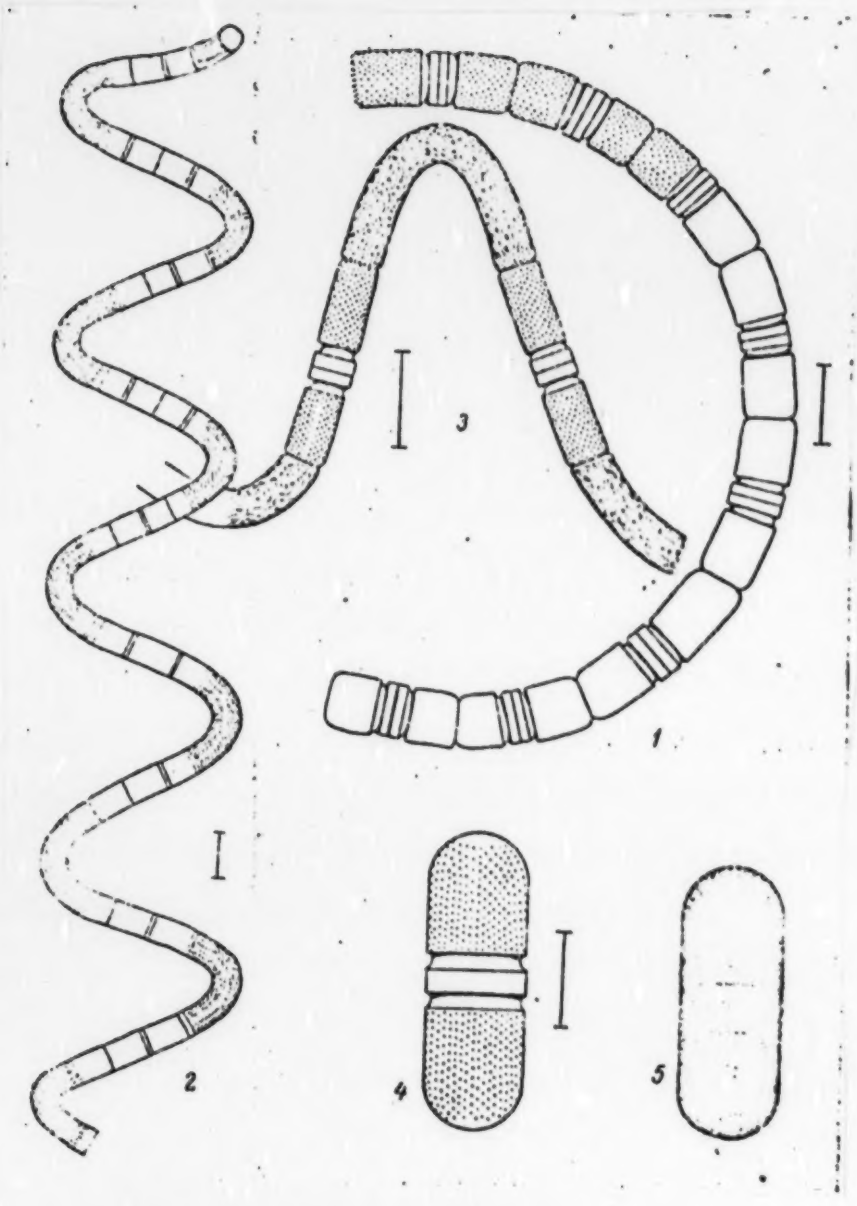
A. M. ambigua f. ambigua et f. curvata filis spiralibus et dimensionibus valide minoribus distinguitur.

The filaments are spirally, helically curved and contain five turns of the helix. The diameter of a helical turn is 23-45 microns, and the distance between the turns is 25-96 microns. The cell dimensions are as follows: width 3-6 microns and valve height 8-12 microns. There are 13-16 rows of pores per 10 microns and 16 pores per row (see fig., 2 and 3).

Type. RSFSR, Khabarovskiy kray, Amur River, in plankton, 27 July 1957, N. A. Khalfina. Stored in Institute of Geology and Geophysics of the Siberian Division, USSR Academy of Sciences (Novosibirsk).

F. spiroides differs from M. ambigua f. ambigua by its spiral, helically curved form of filament and by a smaller cell diameter. In favor of the independence of this form to some extent is the presence in the Amur plankton of straight thin filaments of f. ambigua, attaining only 3-4 microns in width, as in the case of f. spiroides. The final word on this problem can be given by observations of the process of auxospore formation of f. spiroides.

This form differs from M. ambigua f. curvata by the nature of the bends of the filaments and by the smaller cell diameter. While f. curvata forms wide circles, f. spiroides forms an elongated helix in which not only the turns, but also their individual sections always lie in different planes. Of course, given considerable growth the f. curvata filament can exceed the length of the circle, and then form a spiral, but the spiral will always be flattened, since each circle always lies in the same plane. In the case of f. curvata,



1. Melosira ambigua f. curvata
2, 3. M. ambigua f. spiroides
4, 5. M. ambigua f. ambigua, spores

the outer plane (with respect to the circle) side of each cell is always greater than the inner, while this is indistinctly evident at best for the f. spiroides. The cells of the f. spiroides as such often are curves not in the same plane, forming tiny little helices. All this enables us to view f. spiroides as an autonomous form and not to associate it with f. curvata, as was done by Hustedt (1930: 251, 253) with respect to the curved forms of certain other species of Melosira. Also in favor of the independence of this form to some extent is the fact that A. P. Skabichevskiy found in the Irtysh River only f. curvata and discovered no filaments curved like f. spiroides.

The inner relationship of the Amur f. spiroides with M. ambigua f. spiralis Skuja described by Skuja (1948: 320) from several lakes in Sweden is unclear. Skuja did not indicate what was the shape of the spiral: whether it had the form of helix like f. spiroides, or circle, like f. curvata. With respect to the diameter of the turns, extending in size to 110-200 microns, and less often 400 microns according to the data of Skuja, f. spiralis must more correctly be identified with f. curvata. Additional data about M. ambigua f. spiralis Skuja are needed for a final decision.

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